



ICAO ENGINE EXHAUST EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: Trent 1000-R3 BYPASS RATIO: 8.9
 UNIQUE ID NUMBER: 01P19RR118 PRESSURE RATIO (π_{co}): 49.4
 COMBUSTOR: Phase5 Tiled
 ENGINE TYPE: TF RATED THRUST (F_{oo}) (kN): 363.9

REGULATORY DATA **** DATA SUPERSEDED **** SEE FOLLOWING UID FOR REVISED DATA: **02P23RR138**

CHARACTERISTIC VALUE:	HC	CO	NO _x	SMOKE NUMBER
D _p /F _{oo} (g/kN) or SN	0.0	8.1	76.3	16.4
AS % OF ORIGINAL LIMIT	0.0	6.9	54.9	98.6
AS % OF CAEP/2 LIMIT (NO _x)			68.7	
AS % OF CAEP/4 LIMIT (NO _x)			72.1	
AS % OF CAEP/6 LIMIT (NO _x)			78.0	
AS % OF CAEP/8 LIMIT (NO _x)			85.8	

For non-volatile particulate matter (nvPM) emissions, please refer to the ICAO Engine nvPM Emissions Data Sheet.

DATA STATUS

- PRE-REGULATION
 x CERTIFICATION
 - REVISED (SEE REMARKS)

TEST ENGINE STATUS

- NEWLY MANUFACTURED ENGINES
 x DEDICATED ENGINES TO PRODUCTION STANDARD
 - OTHER (SEE REMARKS)

EMISSIONS STATUS

x DATA CORRECTED TO REFERENCE
 (ANNEX 16 VOLUME II)

CURRENT ENGINE STATUS

(IN PRODUCTION, IN SERVICE UNLESS OTHERWISE NOTED)
 - OUT OF PRODUCTION (DATE: -)
 - OUT OF SERVICE (DATE: -)

MEASURED DATA

MODE	POWER SETTING (%F _{oo})	TIME (minutes)	FUEL FLOW (kg/s)	EMISSIONS INDICES (g/kg)			SMOKE NUMBER
				HC	CO	NO _x	
TAKE-OFF	100	0.7	2.783	0.00	0.45	61.62	7.7
CLIMB OUT	85	2.2	2.266	0.00	0.43	45.76	9.9
APPROACH	30	4.0	0.723	0.00	0.57	14.87	9.6
IDLE	7	26.0	0.262	0.00	5.99	6.67	1.8
LTO TOTAL FUEL (kg) or EMISSIONS (g)			998	0	2728	26196	-
NUMBER OF ENGINES				3	3	3	6
NUMBER OF TESTS				7	7	7	8
AVERAGE D _p /F _{oo} (g/kN) or AVERAGE SN (MAX)				0.0	7.5	72.0	15.3
SIGMA (D _p /F _{oo} in g/kN, or SN)				0.0	1.3	1.2	1.7
RANGE (D _p /F _{oo} in g/kN, or SN)				0.0	6.08-8.72	70.58-72.75	12.1-16.8

ACCESSORY LOADS

POWER EXTRACTION 0 (kW) AT - POWER SETTINGS
 STAGE BLEED 0 (% CORE FLOW) AT - POWER SETTINGS

ATMOSPHERIC CONDITIONS

BAROMETER (kPa)	98.9-102.1
TEMPERATURE (K)	275-304.6
ABS HUMIDITY (kg/kg)	0.00308-0.01935

FUEL

SPEC	
H/C	1.91
AROM (%)	17.2

MANUFACTURER: Rolls-Royce plc
 TEST ORGANIZATION: Rolls-Royce
 TEST LOCATION: Derby
 TEST DATES: 07/02/2011-30/11/2017

NO_x REGULATION PARAGRAPH

	2.3.2 c) (CAEP/4)
	2.3.2 d) (CAEP/6)
x	2.3.2 e) (CAEP/8)

REMARKS

- Data from Certification Report EDNS01000615769
- Certification in accordance with Part III, Chapter 2, of Amendment 8 of ICAO Annex 16 Vol. II.
- NO_x levels in accordance with Part III, Chapter 2, 2.3.2 e) (CAEP/8)

Compliance with Fuel Venting requirements:

x ('x' if complies, 'PR' if pre-regulation, '- ' if information is not available)